UNITED STATES PATENT AND TRADEMARK OFFICE

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10/596,604	06/19/2006	Mariana Vassileva Nikolova	NL031516	8358

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EXAMINER
MEJIA, ANTHONY

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *19 June 2006*.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-10* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-10* is/are rejected.

7) ☒ Claim(s) *7* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Priority

1.   Acknowledgment is made of applicant's claim for foreign priority under 35

U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No.

(PCT/IB04/05168), filed on 12/22/2003.

Claim Objections

2.   Claim 7 is objected to because of the following informalities: lack of antecedent

bases in the claims. In this case for example, claim 1 recites, "candidate device" in

steps (a)-(g), however, claim 7, recites, "candidate router" in steps (j) and (m). For the

purposes of further examination the recitation of "candidate router" will be interpreted as

being synonymous to "candidate device". Appropriate correction is required.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4.   Claims 1, 3, 5, and 8-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Shinomiya (US 2003/0037165)

Regarding Claim 1, Shinomiya a method of automatically transferring router functionality, characterized in that the method includes steps of:

(a) providing a data communication network (*see* NW of fig.1) including one or more candidate devices (e.g., router 3-2) dynamically assignable as routers (e.g., router 3-2) within the network for routing data traffic there through (e.g., a plurality of routers ((A) 3-1 and (B) 3-2), which constitute a virtual router 3, in which one of the routers is the master router, and the rest of the routers are back-up routers, thus router (A) 3-1 can automatically (instantly) switch to router (B) 3-2 in the event of a fault, par [0043] and fig.1);

(b) providing watching means (router 3-2) for monitoring activity of the one or more candidate devices (router 3-2) and delegating authority (R.sub.W) to one or more of the devices to provide a data-routing function thereat (e.g., router(s) 3-2 which is not assigned as the master router, monitors an advertisement packet to conform that the master router (3-1) is working properly, if the master router (3-1) is determined to not be working properly, then the master router is delegated (substituted) with one of the backup router(s) (3-2), par [0046] and [0070-0071]);

(c) arranging for each candidate device (router 3-2 of Virtual router 3) to include a first record (R.sub.A) (e.g., IP address) stored locally therein (retained) of one or more routers that it assumes to be active in the network (par [0049]);

(d) arranging for each candidate device (router 3-2) to monitor the network to determine one or more routers (router 3-2) (R.sub.ADV) presently active on the network and generate a corresponding second record (e.g., VRRP/processing data table 32) of active routers (par [0046], [0050], [0090], and fig.9A);

(e) arranging for each candidate device to compare its first and second records (e.g., the IP address of the router itself is compared with the IP address of the other router in the virtual router 3 according to the information in the VRRP/processing data table 32) par [0049-0050]);

(f) when one or more of the candidate devices (router 3-2) in step (e) determine the first and second records to be non-equivalent, arranging for the one or more devices to be updated with more recent first records from the watching means (e.g., when the router is determined to be non-equivalent (qualification to be the master), then an advertisement packet which contains the most recent first record (see fig.3) is prepared and sent to all the backup routers, par [0051]);

(g) when one or more of the candidate devices (router 3-2) in step (e) determine that their own address matches that of the first records, arranging for these one or more candidate devices to assume function as routers within the network (e.g., if the router does not qualify to be the master router, than it will assume to function as a router, and not as a master router within the network, par [0064]);

(h) repeating steps (a) to (g) as required (e.g., the respective steps will be repeated whenever it necessary for a backup router to perform processing in place of the master router when the master router fails, par [0009], and par [0070-0071])

Regarding Claim 3, Shinomiya teaches the method according to claim 1 as described above. Shinomiya further teaches wherein the watching means and one or more candidate devices are operable to monitor router activity within the network in steps (b) and (d) by way of link local data advertised within the network (e.g., an advertisement packet is prepared and sent to all the backup routers within the network, par [0051] and fig.3);

Regarding Claim 5, Shinomiya teaches the method according to claim 1, wherein the watching means is operable to assign one of the candidate devices in a situation where no routers are at least locally active in the network (e.g., each router is assigned a priority, inherently if a router is not active on the local network, it will become active after it is assigned a priority, par [0045]).

Regarding Claim 8, Shinomiya teaches a communication network including one or more candidate devices operable to function as routers according to the method of claim 1 (see router 3-2 fig.1).

Regarding Claim 9, Shinomiya teaches a candidate device (router 3-1 or router 3-2) operable as a router according to the method of claim 1 (see fig.1).

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Shinomiya and in further view of Hinden ("Virtual Router Redundancy Protocol for IPv6")

Regarding Claim 2, Shinomiya teaches the method according to claim 1 as

described above. Shinomiya does not explicitly teach wherein the one or more

candidate devices are arranged to function as IPv6-standard routers.

However, Hinden in a similar field of endeavor such as Virtual Router

Redundancy Protocol for IPv6 teaches wherein one or more candidate devices are

arranged to function as IPv6-standard routers (see 3.0 VRRP Overview, pages 6-7).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to utilize the teachings of Hinden in Shinomiya in order to take

advantage of the large expansion that is available in the address space of the IP

address in IPv6 to accommodate both greater occupancy of enabled devices as well as

decreasing the reliance on network translation techniques which have been used to

conserve address space. One of ordinary skill in the art at the time the invention was

made would have been motivated to combine the teachings of Shinomiya and Ishidia in order to help gain a quicker switch over to back up the routers.

7.   Claims 4, 7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya and in further view of Scott et al. (US 2004/0019696) (referred herein after as Scott)

Regarding Claim 4, Shinomiya teaches the method according to claim 1 as described above. Shinomiya does not explicitly teach wherein the watching means is operable to selectively activate and deactivate one or more candidate devices in the network for resolving conflict between multiple competing routers active within the network.

However, Scott in a similar field of endeavor such as an application network communication method and apparatus teaches wherein a watching means (application router 604) is operable to selectively activate and deactivate one or more candidate devices (application router 608) in the network for resolving conflict between multiple competing routers (application routers 604 and 608) active within the network (e.g., once the application router 604 is working properly, application router can be changed back as being active, and application router 608 can be changed back to standby, par [0054] and fig.6A).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Scott in Shinomiya in order to enable a

temporary fault-tolerant solution to a router that fails temporary. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Shinomiya and Scott to help minimize the complexity and costs of the network.

Regarding Claim 7, the combined teachings of Shinomiya and Scott teach the method of operating the watching means as claimed in claim 1 above, characterized in that the method includes steps of:

(i) receiving at least one communication (Shinomiya: advertisement packet) from one or more candidate devices at the watching means, the at least one communication including details of the first records of the candidate devices (Shinomiya: e.g., an advertisement packet which contains the most recent first record (IP address) (see fig.3) is prepared and sent to all the backup routers (3-2) in the Virtual Router 3, par [0051]);

(j) checking (comparing) that the first records (IP addresses) in step (i) correspond to a record of candidate router maintained at the watching means for determining activation and/or deactivation of candidate routers (e.g., the IP address are compared with the record (information which includes IP address, see fig. 9A) in VRRP/processing table 32, to determine if router is qualified to be activated and/or deactivated (inherently, if router is qualified to become master router it will be activated) become the master router par [0049-0050]);

(k) monitoring router activity at least locally within the network (Shinomiya: e.g., router(s) 3-2 of Virtual Router 3 monitors an advertisement packet to confirm that the master router 3-1 is working properly, par [0046], and par [0070-0071]);

(l) updating the one or more candidate devices (Scott: application routers 604 and 608) regarding which of the candidate devices are to be active and which are to be inactive (Scott: e.g., once the application router 604 is working properly, application router can be changed back as being active, and application router 608 can be changed back to standby, par [0054] and see fig.6A); and

(m) updating the record of candidate router maintained at the watching means (Shinomiya: e.g., router 3-2 orders data manager 332 to record allocation packet information which includes record of candidate maintained (see fig.10A) into the VRRP/processing data table 32) par [0117], and fig.9A).

Regarding Claim 10, the combined teachings of Shinomiya and Scott teach a router monitoring device (Shinomiya: router 3-2 of Virtual Router 3) including watching means operable according to the method of claim 7 (Shinomiya: e.g., router(s) 3-2 of Virtual Router 3 monitors an advertisement packet to confirm that the master router 3-1 is working properly, par [0046], and par [0070-0071] and see fig.1).

8.   Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya and in further view of Tappan et al. (US 7,246,175) (referred herein after as Tappan)

Regarding Claim 6, Shinomiya teaches the method according to claim 1 as described above. Shinomiya does not explicitly teach wherein the network is a heterogeneous IPv4-/IPv6-standard network.

However, Tappan in a similar field of endeavor such as IPv6 over MPLS (Multiprotocol Label Switching) IPv4 Core teaches wherein the network is a heterogeneous IPv4-/IPv6-standard network (see fig.2)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Tappan in Shinomiya to enable the routers to be able to dynamically communicate in two different Internet Protocols. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Shinomiya and Tappan to help improve the flexibility in being able to deploy a variety of routing schemes, and have the flexibility of address space.

Other Pertinent Prior Art

9.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A. Yamaya et al. (US 2002/0184387) disclose a method for connecting between networks, virtual router, and system for connecting between networks using this virtual router.

B. Yip et al. (US 6,954,436) disclose a method and apparatus for selecting redundant routers using tracking.

C. Bonhomme et al. (US 2003/0233473) discloses a method for configuring logical connections to a router in a data communication system.

D. Srikanth et al. (US 6,556,547) disclose a method and apparatus providing for router redundancy of non Internet protocols using virtual router redundancy protocol.

E. Wils et al. (US 6,397,260) discloses automatic load sharing for network routers.

F. Fotedar (US 2004/0085965) disclose a redundant router network.

G. Knight et al. ("Virtual Router Redundancy Protocol") disclose the definition and implementation of the Virtual Router Redundancy Protocol.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY MEJIA whose telephone number is (571)270-3630. The examiner can normally be reached on Mon-Thur 9:30AM-8:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ABDULLAHI SALAD
PRIMARY EXAMINER

Mejia, Anthony
Patent Examiner